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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of) BEFORE THE BOARD OF PATENT
Peter FIELD et al.) APPEALS AND INTERFERENCES
Serial No. 08/800,742) Appeal No.:
Filed: February 14, 1997) Examiner: D.M. Boucher
For: ELECTROMECHANICAL) Group Art Unit: 3627
CYLINDER LOCK) Monday, March 1, 1999

BRIEF ON APPEAL

Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Dear Sir:

This is an appeal from the final rejection of claims 13, 17-19, 22 and 26 in the Office action dated July 30, 1998. A Notice of Appeal was filed on November 30, 1998. A one month extension of time from January 30, 1999 to February 28, 1999 for filing a brief on appeal is requested.

REAL PARTY IN INTEREST

The real party in interest is Medeco Security Locks, Inc.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences which would affect or be affected by the Board's decision in this appeal.

STATUS OF THE CLAIMS

Claims 1-20 and 22-26 are pending in this application.

Claims 1-12 stand allowed; claims 14-16 and 23-25 stand objected.

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to as depending from a rejected base claim, but would be allowable if appropriately rewritten; claim 20 stands withdrawn from further consideration as being directed to a non-elected species. Claims 13, 17-19, 22 and 26 stand finally rejected and are the subject of this appeal. Claims 13, 22 and 26 constitute the independent claims on appeal.

STATUS OF AMENDMENTS

An amendment after final rejection was filed on July 7, 1998 and was entered in conjunction with the withdrawal of the finality of the Office action dated April 7, 1998. No amendment subsequent to the second final Office action dated July 30, 1998 has been proposed.

SUMMARY OF THE INVENTION

The present invention is directed generally to the art of locks and keys and in particular is directed to an electromechanical cylinder lock, wherein electronic authorization is required in addition to the use of a mechanical key for operation of the lock.

An example of the lock cylinder according to the present invention is shown in Fig. 1 and includes an outer shell 20 having a bore 22 in which is positioned a rotatable barrel or plug 30. Shell 20 further includes a cavity 24 into which is projected a side bar 60 (the main portion of which is located within barrel 30). Side bar 60 cooperates with barrel 30 to either block or permit rotation of the barrel 30 with respect to

the shell 20. Rotation of the barrel 30 typically retracts a door latch or bolt and allows access to a locked location.

A keyway 34 is configured to receive a mechanical key which typically contains a bitting pattern matching the pattern of a plurality of tumbler pins located in the barrel such that the key lifts the tumbler pins to align them along a shear line, and thus allowing the barrel to rotate within the shell 20. The side bar 60, in the absence of blocking mechanism or slider bar 50, would be cammed inward by the upper camming surface of cavity 24 upon rotation of the barrel 20. According to the invention, side bar 60 is normally blocked from being cammed by slider bar 50. This is explained at page 7, line 2, to page 8, line 11 of the specification.

According to the invention, as shown for example in Figs. 3A and 3B, a blocking mechanism actuator assembly is provided which functions to move the blocking slider bar 50 from a blocking position with respect to the side bar 60 (as shown in Fig. 3A) to an unblocking position (as shown in Fig. 3B), whereby the slider 50 is aligned with a recess 61 in the side bar 60. This is accomplished by the use of a shape memory alloy wire 80 in combination with a rocker 70, a pusher 90 and a spring 100.

A shape memory alloy material is one which undergoes a crystalline phase change upon being heated, causing it either to expand or to contract, depending upon whether the material has been pre-stressed to be in a compressed state or a stretched state. The shape memory alloy wire 80 is heated by passing a small amount of electrical current through it by a

microprocessor-activated switch (see Fig. 18). The microprocessor 601 will activate the switch 608 only when the microprocessor receives a signal indicating that the keyholder is authorized to operate the lock. Such a signal may be provided in one of many ways, and is not critical to the invention of the claims here on appeal.

Upon heating of the wire 80, it contracts against the force of spring 100, pulling the rocker 70 in against spring 100 and causing pusher 90 to push the slider bar 50 into alignment with recess 61 in side bar 60, thus allowing side bar 60 to be cammed inward into the barrel upon rotation of the barrel by an otherwise properly bitted key. Upon cooling, the wire 80 returns to its prestressed condition and the slider bar 50 is returned to its blocking position shown in Fig. 3A by the force of spring 100. The operation is described at page 9, line 5 to page 11, line 3.

According to the preferred embodiment of the invention, the entire blocking mechanism and actuator (as well as the control electronics) are located within the barrel 30 of the lock cylinder, as shown in Fig. 16.

ISSUES PRESENTED ON APPEAL

The following issues are presented by this appeal:

- 1) Whether claims 13, 17-19, 22 and 26 are unpatentable over the proposed combination of Aston, U.S. Patent No. 5,351,042, and

Gokcebay et al., U.S. Patent No. 5,552,777 ("Gokcebay"), under 35 U.S.C. § 103(a), and are properly rejected on that basis.

GROUPING OF CLAIMS

Claims 13, 17-19, 22 and 26 stand or fall together and will not be separately argued in the brief.

ARGUMENT

The Rejection of Claims 13, 17-19, 22 and 26 Is Improper and Should Be Reversed

The final Office action asserts that it would have been obvious to one of ordinary skill in the art,

"to mount the nitinol wire and lever 42 [of Aston] in the plug which is accepted into a recess of the casing in a manner similar to that set forth in Gokcebay et al. for the reasons set forth therein."

This ground of rejection is improper and should be reversed.

Contrary to the Examiner's position that it would have been obvious from the disclosure of Gokcebay to have mounted the nitinol wire 40 and lever 42 of Aston Fig. 4 inside the plug 11 of Aston, there exists no suggestion within the four corners of the Gokcebay reference from which one of ordinary skill in the art would have been motivated to make the proposed modification. Instead, it is maintained that the only suggestion for making such a modification comes from an improper hindsight reading of the present application.

In particular, as explained in the specification at page 4, line 25 to page 5, line 6, an important benefit of the present

application lies in providing the actuator device within the barrel of the lock cylinder. This permits the barrel to be removed and placed in the outer shells of different lock cylinders, permits the barrel to be substituted for the barrel of a purely mechanical lock cylinder as a retrofit, and additionally allows the utilization of different but interchangeable electromechanical barrels with a plurality of lock cylinders in a multiple lock system. None of these advantages or benefits are anywhere recognized in the prior art of record relied upon in the rejection of the claims on appeal.

Aston discloses in Fig. 4 the use of a heatable nickel-titanium (i.e., nitinol) wire 40 as an actuator for a spring-loaded lever 42 engaged in a recess of a lock barrel as a blocking mechanism for preventing rotation of the barrel. The wire 40 is connected to the outer shell of the lock through a tension spring 41, and the lever 42 is connected to the outer shell through a return spring (unnumbered).

The final rejection relies on "the reasons set forth" in Gokcebay as allegedly providing a motivation to those skilled in the art to have made the suggested modification of the Aston device, but fails to state the specific reasoning set forth in Gokcebay to support the Examiner's position (other than setting forth the conclusory statement that Gokcebay "teaches the benefits of housing the electronic access feature of a cylinder lock in the mechanical lock plug itself").

In this regard, it is pointed out that Gokcebay states the object of his invention is to provide a system "which avoids the need for electronics, solenoids or other hardware which would take up space within the coin box or the lock casing adjacent to the lock." Col. 2, ll. 52-55. Gokcebay specifically references U.S. Patent No. 5,140,317 (assigned to the present assignee) as a system that "requires additional hardware within the lock casing or the coin box for blocking the opening of the lock." (The '317 patent discloses an electronic security system wherein in one embodiment the control electronics and blocking mechanism are located separate and apart from the mechanical cylinder lock.)

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In accordance with the stated objective, Gokcebay provides a lock "which occupies no more space than the mechanical lock itself." Thus, while the disclosed embodiment of Gokcebay contains a solenoid and retractable pin in the plug, there is no teaching of any specific benefit of "housing the electronic access feature of a lock cylinder in the mechanical lock plug itself" (emphasis added) as alleged in the Office action.

It is seen in the Aston reference that in the embodiment of Fig. 1 as well as the embodiment of Fig. 4, all of the electronics, solenoids and other hardware are indeed located within the lock cylinder 10. As such, the Aston device already satisfies the stated objective of the Gokcebay reference, wherein "[n]othing is required outside the lock cylinder."

Thus, there exists in the Gokcebay reference no stated improvement, advantage or particular purpose to be served from which one of ordinary skill in the art would have made the modification proposed in the Office action. To the contrary, the only suggestion for making such a modification comes from the present application.

It is noted here for the sake of completeness that a previous rejection in the Office action of April 7, 1998, wherein it was proposed to replace the disclosed blocking actuator of Gokcebay with the wire actuator as disclosed by Aston was withdrawn in the final Office action here appealed from.

While it is true, as stated in the final Office action, that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference, neither is obviousness established where it is shown merely that a person of ordinary skill in the art would be able to make the proposed combination or would know how to implement the proposed modification. Instead, there must exist some reason within the prior art as a whole for the person of ordinary skill in the art to have made the proposed combination. The reason, suggestion or motivation can not come from the applicant's invention itself. In re Oetiker, 24 USPQ2d 1443 (Fed. Cir. 1992).

In summary, while one of ordinary skill may have been able to modify the Aston device so that the components could be

incorporated into the plug as asserted in the final rejection, there exists no reason or motivation in the prior art from which the skilled person would have been led to do so, since the Gokcebay reference does not teach any improvement or advantage to be achieved beyond what is already disclosed by Aston.

CONCLUSION

Claims 13, 17-19, 22 and 26 are directed to a new and unobvious electromechanical cylinder lock that is nowhere taught or suggested in the prior art. In view of the foregoing, the Honorable Board is requested to reverse all outstanding grounds of rejection and to direct the passage of this application to issue.

Please charge any fee or credit any overpayment pursuant to 37 CFR 1.16 or 1.17 to Deposit Account No. 02-2135.

Respectfully submitted,

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APPENDIX OF CLAIMS ON APPEAL

13. An electromechanical lock cylinder, comprising:
- an outer shell having a bore formed therein and a cavity extending from the bore into the shell;
- a barrel disposed within the bore in the shell and being rotatable relative thereto;
- a blocking mechanism, located in said barrel, for normally blocking rotation of said barrel and being movable to an unblocking position to permit rotation of said barrel; and
- means cooperating with the blocking mechanism for selectively moving the blocking mechanism from the blocking position to the unblocking position upon occurrence of a predetermined condition, said moving means, located in said barrel, comprising a shape memory alloy actuator activated by passing electrical current therethrough, said shape memory alloy actuator being disposed within said barrel.
17. A lock cylinder according to claim 13, further comprising control means, responsive to electrical data input from a key inserted into said lock cylinder, for causing said electrical current to be passed through said shape memory alloy actuator.
18. A lock cylinder according to claim 13, wherein said shape memory alloy actuator comprises a nitinol wire.

19. A lock cylinder according to claim 13, further comprising thermal interlock means for preventing operation of the lock cylinder upon external heating of said lock cylinder.
22. An electromechanical lock cylinder, comprising:
- an outer shell having a bore formed therein and a cavity extending from the bore into the shell;
- a barrel disposed within the bore in the shell and being rotatable relative thereto;
- a blocking mechanism located in said barrel for normally blocking rotation of said barrel and being movable to an unblocking position to permit rotation of said barrel; and
- electronic control means located at least in said lock cylinder cooperating with the blocking mechanism to selectively move the blocking mechanism from the blocking position to the unblocking position upon occurrence of a predetermined condition; and
- a nitinol wire actuator cooperating with said electronic control means and said blocking mechanism for causing said blocking mechanism to move to said unblocking position upon passing of current through said wire, under control of said control means.
26. A lock cylinder, comprising:
- an outer shell having a bore formed therein;
- a barrel disposed within the bore in the shell and being rotatable relative thereto;

a shape memory alloy actuator, located in said barrel, for enabling operation of said lock cylinder by selective controlled application of heat to said actuator; and

thermal interlock protection means, located in said barrel, for preventing operation of said lock cylinder in the event of external heating of said lock cylinder.